

## 430 CLAIMS

1. A radiation detector in which primary electrons are released into a gas by ionizing radiation from a radiation source (10) and are caused to drift to read-out electrodes (1) by means of an electric field (2) generated by applying a negative tension to a drifting electrode (11) located near the radiation source (10), characterized in that it comprises

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- a first set of longitudinal electrodes (1) disposed parallel to each other to form a first plane (4) closest to the radiation source (10), said first plane being substantially perpendicular to said electric field (2) and
- 445 - a second set of longitudinal electrodes (1) disposed parallel to each other to form a second plane (4'), said second plane being superposed and parallel to said first plane (4) and
- 450 - a third set of longitudinal electrodes (1) disposed parallel to each other to form a third plane (4''), said third plane being superposed and parallel to said first and second planes (4) and (4'),

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wherein, when viewed from above, the direction of the longitudinal electrodes (1) in each of said planes forms an angle with the direction of the longitudinal electrodes (1) in each of the other planes, each crossing of the electrodes producing a local electric field gradient, and

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wherein the longitudinal electrodes (1) in the respective planes are applied progressively positive tensions relatively to the drifting electrode (11) when going from the plane (4) closest to the drifting electrode to the plane (4'') farthest from the drifting electrode, said plane (4'') farthest from the drifting electrode being applied a positive tension.

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2. The radiation detector of claim 1, characterized in that when viewed from above, the angle between the directions of the longitudinal electrodes (1) in each of said planes is 60 degrees, and in that the longitudinal electrodes (1) in a given plane cross the longitudinal electrodes (1) in the two other planes at the same points (5) where the longitudinal electrodes (1) in these two other planes cross.

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3. The radiation detector of anyone of claims 1 and 2, characterized in that the longitudinal electrodes (1) forming said planes are conductive strips (6).

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4. The radiation detector of claim 3, characterized in that said planes are spaced by spacers (7) located at the crossing points (5) of said conductive strips.

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5. The radiation detector of claim 4, characterized in that said spacers (7) are made of polyimide.

6. The radiation detector of claim 4, characterized in that said spacers (7) are made of glue.

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7. The radiation detector of anyone of claims 1 and 2, characterized in that the parallel longitudinal electrodes (1) forming said planes are conductive wires (8).

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8. The radiation detector of claim 7, characterized in that said conductive wires (8) are woven with non-conductive wires (9) to form a mesh, said conductive wires being oriented according to a first axis and

505        said non-conductive wires being oriented according  
to a second axis, said second axis being  
perpendicular to the first axis.

9.        The radiation detector of claim 8, characterized in  
510        that said conductive wires (8) are individually  
alternated with non-conductive wires (9) in said  
first axis.

10.       The radiation detector of anyone of claims 1 to 9,  
515        characterized in that said longitudinal electrodes  
(1) are made of Tungsten.

11.       The radiation detector of anyone of claims 1 to 10,  
520        characterized in that its physical structure (3) is  
mechanically flexible.